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| APPLICATION NO.                    | FILING DATE   | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.     | CONFIRMATION NO. |  |
|------------------------------------|---------------|----------------------|-------------------------|------------------|--|
| 09/810,454                         | 03/19/2001    | Eiji Hayashi         | 50088-056               | 7197             |  |
| 75                                 | 90 02/26/2002 |                      |                         |                  |  |
| McDERMOTT, WILL & EMERY            |               |                      | EXAMINER                |                  |  |
| 600 13th Street,<br>Washington, DO |               |                      | JOHNSON, JONATHAN J     |                  |  |
|                                    |               |                      | ART UNIT                | PAPER NUMBER     |  |
|                                    |               |                      | 1725                    |                  |  |
|                                    |               |                      | DATE MAILED: 02/26/2002 | フ                |  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|   |   |                   |                        |   | _ |  |  |  |
|---|---|-------------------|------------------------|---|---|--|--|--|
| Office Action Summary   |   | Application       | n No.                  | Applicant(s)  |   |  |  |  |
|   |   | 09/810,454        | 4                      | HAYASHI   |   |  |  |  |
|   |   | Examiner          |                        | Art Unit  |   |  |  |  |
|   |   | Jonathan .        |                        | 1725  | _ |  |  |  |
| The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply  |   |                   |                        |   |   |  |  |  |
| A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.  - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).  - Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).  Status |   |                   |                        |   |   |  |  |  |
| 1)⊠   | Responsive to communication(s) filed on 19  | March 2001        |                        |   |   |  |  |  |
| 2a) <u></u> □   | This action is <b>FINAL</b> . 2b)⊠ T  | his action is i   | non-final.             |   |   |  |  |  |
| 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.  |   |                   |                        |   |   |  |  |  |
| Disposition   | on of Claims  |                   |                        |   |   |  |  |  |
| 4)⊠   | 4)⊠ Claim(s) <u>1 and 2</u> is/are pending in the application.  |                   |                        |   |   |  |  |  |
| 4a) Of the above claim(s) is/are withdrawn from consideration.  |   |                   |                        |   |   |  |  |  |
| 5)  | Claim(s) is/are allowed.  |                   |                        |   |   |  |  |  |
| 6)⊠   | Claim(s) <u>1 and 2</u> is/are rejected.  |                   |                        |   |   |  |  |  |
| 7)  | Claim(s) is/are objected to.  |                   |                        |   |   |  |  |  |
| 8)□   | Claim(s) are subject to restriction and/  | or election re    | quirement.             |   |   |  |  |  |
| Application   | on Papers   |                   |                        |   |   |  |  |  |
| 9)[] 7  | The specification is objected to by the Examin  | ier.              |                        |   |   |  |  |  |
| 10)□ 7  | The drawing(s) filed on is/are: a)☐ acc   | epted or b)       | objected to by the Exa | miner.  |   |  |  |  |
|   | Applicant may not request that any objection to t   |                   |                        |   |   |  |  |  |
| 11) 🔲 🏾   | The proposed drawing correction filed on  | is: a) <u></u> ap | proved b)⊡ disappro    | oved by the Examiner.                                   |   |  |  |  |
| If approved, corrected drawings are required in reply to this Office action.  |   |                   |                        |   |   |  |  |  |
| 12) 🗌 🗆   | The oath or declaration is objected to by the E   | Examiner.         |                        |   |   |  |  |  |
| Priority under 35 U.S.C. §§ 119 and 120   |   |                   |                        |   |   |  |  |  |
| 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).   |   |                   |                        |   |   |  |  |  |
| a)⊠ All b)□ Some * c)□ None of:   |   |                   |                        |   |   |  |  |  |
|   | 1. Certified copies of the priority documents have been received.   |                   |                        |   |   |  |  |  |
|   | 2. Certified copies of the priority documents have been received in Application No  |                   |                        |   |   |  |  |  |
| <ul> <li>3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).</li> <li>* See the attached detailed Office action for a list of the certified copies not received.</li> </ul>   |   |                   |                        |   |   |  |  |  |
| 14)∐ A  | 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).                            |                   |                        |   |   |  |  |  |
| a) ☐ The translation of the foreign language provisional application has been received. 15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.   |   |                   |                        |   |   |  |  |  |
| Attachment(s)   |   |                   |                        |   |   |  |  |  |
| 2) Notic  | e of References Cited (PTO-892)<br>e of Draftsperson's Patent Drawing Review (PTO-948)<br>nation Disclosure Statement(s) (PTO-1449) Paper No(s) | <u>2</u> .        |                        | y (PTO-413) Paper No(s)<br>Patent Application (PTO-152) |   |  |  |  |

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## **DETAILED ACTION**

## Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ulmer (6,138,894) in view of Tsujino (6,299,015). Ulmer et al. teaches applying pressure and heat to solder bumps, formed on both or one of a connecting pad of a semiconductor element or a connection pad of the wireing board for connecting the solder bumps under a state that the solder bumps are in contact and fused while a ultrasonic head is moved (Figure 3, item 50 and Figure 4, items 52 and 54). Tsujino teaches the bond head is moved in a plurality of directions (Column 2, Lines 30-55). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Ulmer et al. to utilize the bond head movement in order to provide an excellent bond (see Tsujino Column 2, Lines 19-35).

With respect to Claim 2, the teachings of Ulmer and Tsujino are the same as relied upon in the rejection of Claim 1 as applied above and further in view of Kuriyama (5,315,474).

Kuriyama teaches an inactive atmosphere or a reducing atmosphere is formed during bonding (Column 5, Lines 15-45). It would have been obvious to one of ordinary skill in the art at the time of

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the invention to modify the combined invention of Ulmer et al. and Tsujino to utilize the particular gas in order to prevent oxidation of the bonding surfaces.

## Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Johnson whose telephone number is 703-308-0667. The examiner can normally be reached on M-Th 7AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 703-308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

jj y February 10, 2002

M. ALEXANDRÁ ELVE PRIMARY EXAMINER

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